

WHAT IS CLAIMED IS:

1. A method for duplexing data in a storage unit system for carrying out backup operation of data from a primary side system comprising one or more primary side control units to a secondary side system comprising one or more secondary side control units, the method comprising the steps of:

adding time information relating to a write time to a data of a write request and storing the information in a cache memory in the primary side control unit when there is a write request from a processing unit to the primary side control unit;

transmitting the stored write data and the time information to the secondary side control unit;

storing the write data and the time information to a cache memory in the secondary side control unit;

transmitting the time information stored in the cache memory in the secondary side control unit to another secondary side control unit via a communication route for connecting the secondary side control units with each other;

comparing the time information of a first secondary side control unit received from a first primary side control unit with a time information transmitted from a second secondary side control unit, and transmitting an older time

information to the next secondary side control unit via the communication route; and

circulating the older time information between the plurality of secondary side control units, and determining data guarantee time for guaranteeing duplexing of the write data between the plurality of secondary side control units.

2. A method for duplexing of data in a storage unit system according to Claim 1, wherein the method comprises the steps of:

notifying the data guarantee time to another secondary side control unit connected via the communication route by the secondary side control unit; and

circulating the data guarantee time via the communication route between the plurality of secondary side control units.

3. A method for duplexing of data in a storage unit system according to Claim 2, wherein the secondary side control units transmit the older time information and the data guarantee time together to the other secondary side control unit connected via the communication route and circulates and carries out determination of data guarantee time between the plurality of secondary side control units

and notification of the data guarantee time between the plurality of secondary side control units.

4. A method for duplexing of data in a storage unit system according to Claim 3, wherein the method comprises the step of executing determination of the data guarantee time and notification of the data guarantee time with two or more processes in parallel and at an arbitrary time interval by the secondary side control unit.

5. A method for duplexing of data from a plurality of primary side control units receiving the data written by a processing unit to a plurality of secondary side control units, the method comprising:

a first step for receiving data from the processing unit by the plurality of primary side control units;

a second step for transmitting a first information relating to the time of receiving of the data from the processing unit and relating to the data to the plurality of secondary side control units by the plurality of primary side control units; and

a third step for circulating and communicating a second information relating to the first information between the plurality of secondary side control units by the plurality of secondary side control units.

6. A method for duplexing of data according to Claim 5, wherein the third step is carried out on a physical communication route connecting the plurality of secondary side control units via a ring-like connection.

7. A method for duplexing of data according to Claim 5, wherein the second information transmitted by a first secondary side control unit is updated in the third step by a second secondary side control unit receiving the first information by referring the first information.

8. A method for duplexing of data according to Claim 7, wherein the first secondary side control unit transmitting the second information determines a time for guaranteeing duplexing of the data from the second information received by the plurality of secondary side control units.

9. A method for duplexing of data according to Claim 8, further comprising:

a fourth step for notifying the guarantee time to the plurality of secondary side control units via the circulatory communication by the first secondary side control unit.

10. A method for duplexing of data according to Claim 9, wherein the third step and the fourth step are executed together.

11. A method for duplexing of data according to Claim 9, wherein a step combining the third step and the fourth step is executed by a plurality of times along a physical communication route connecting the plurality of secondary side control units via a ring-like connection.

12. A method for duplexing of data in a storage unit system for carrying out backup operation of data from one or more primary side control units comprising a primary side system to one or more secondary side control units comprising a secondary side system, the method comprising the steps of:

connecting the secondary side control units with each other via communication means; and

circulating and communicating management information data between the secondary side control units via the communication means and determining a common management information relating the data.

13. A storage system, comprising a plurality of primary side control units receiving data written by a processing unit and a plurality of secondary side control units receiving the data as duplexed data, the system comprising:

a plurality of data receiving units in the plurality of primary side control units receiving data from the processing unit;

a plurality of data transmitting units in the plurality of primary side control units receiving a first information relating to a time of receiving of the data from the processing unit and relating to the data to the plurality of secondary side control units;

a data transmitting unit in the first control unit for transmitting a second information relating to the first information from a first secondary side control unit to a second secondary side control unit; and

a data receiving unit in the second secondary side control unit receiving the transmitted second information, wherein:

the plurality of secondary side control units form a circulatory communication route.

14. A storage system according to Claim 13, wherein the circulatory communication route comprises a physical ring-like communication route.